# Parallelism of IDR($s$) Method based on an Extended Secant Method by Means of Cache-Cache [ka$\int$ka$\int$] Balance

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**Abstract:** A number of iterative methods based on IDR($s$) Theorem proposed by Sonneveld *et al.* in 2008 have been proposed. Their excellent convergence rate has much attracted attention. We consider parallelism of an extended IDR(s) method based on the secant method by means of the proposed Cache-Cache Balance technique. First, we extend so-called Secant method of $N$ dimension, and apply it to Krylov subspace method for solving linear systems. Secondly, we consider its parallelism for the purpose of the fast computation.

In our talk, we describe an outline of the Cache-Cache Balance technique for parallelism. Cache-Cache [ka$\int$ka$\int$] in French means "hide and seek" of play of kids in English. Some types of Cache-Cache technique[1] for parallelism can be applied to iterative methods for the solution of linear systems. Through many numerical experiments, we will make clear effectiveness of the Cache-Cache Balance implementation for parallelism.

[1 ] Seiji Fujino, Chiaki Itoh, Kousuke Iwasato, Cache-Cache Elements technique for Eisenstat type of preconditioning for parallelism, PMAA14, Universita della Svizzera italiana, Lugano, Switzerland, July 2-4, 2014.

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